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1. Perform the following tasks for an array called fractions:
    a. Declare a constant ARRAY_SIZE that's initialized to 10
        i. final int[] ARRAY_SIZE = 10;
    b. Declare an array with ARRAY_SIZE elements of type double, and initialize the elements to 0
        i. double fractions[] = new double[ARRAY_SIZE];
    c. Refer to array index 4.
        i. double indexFour = fractions[4];
    d. Assign the value 1.667 to array index 9.
        i. fractions[9] = 1.667
    e. Assign the value 3.333 to array index 6.
        i. fractions[6] = 3.333
    f. Sum of all elements of the array, using a for loop statement. Declare the integer variable x as a control variable for the loop.

```
double sum = 0;
for (int x = 0; i < fractions.length; i++) {
  sum += fractions[i];
}
```

2. **Airline Reservation System** A small airline has just purchased a computer for its new automated reservations system. You've been asked to develop the new system. You're to write an application to assign seats on each flight of the airline's only plane (capacity: 10 seats). Your application should display the following alternatives:

```
public class Airplane {
  static boolean[] seatAvailable = new boolean[10];
  public static void main(String[] args) {
    Scanner scanner = new Scanner(System.in);
    while (true) {
      System.out.print("Please type 1 for First Class and Please type 2 for Economy: ");
      int classNum = scanner.nextInt();
      while(true) {
        if (classNum == 1 || classNum == 2) {
            break;
        }
        System.out.print("Enter valid class: ");
        classNum = scanner.nextInt();

      }
      systemResponse(scanner, classNum);
      if (isThereSeatAvailable() == false) {
        System.err.println("No more seats available. Flight leaves in 3 hours.");
          break;
      }
```

```
        }
        scanner.close();
    }
    private static boolean isThereSeatAvailable() {
        for (int i = 0; i < seatAvailable.length; i++) {
            if (seatAvailable[i] == false) {
                return true;
            }
        }
        return false;
    }
    private static int setSeat(int start, int end) {
        for (int i = start; i <= end; i++) {
            if (seatAvailable[i] == false) {
                seatAvailable[i] = true;
                return i + 1;
            }
        }
        return 0;
    }
    private static void systemResponse(Scanner scanner, int classNum) {
        String classType1, classType2;
        if (classNum == 1) {
            classType1 = "First-class";
            classType2 = "Economy";
        } else {
            classType1 = "Economy";
            classType2 = "First-class";
        }
        int setSeat = 1;
        if (classNum == 1) {
            setSeat = setSeat(0, 4);
        } else if (classNum == 2) {
            setSeat = setSeat(5, 9);
        }
        char answer = 'n';
        if (setSeat == 0) {
            System.err.print(classType1 + " is full. Would you like to to be placed at " + classType2 + "? Type y
if yes, n if no: ");
            if (scanner.hasNext()) {
                answer = scanner.next().charAt(0);
            }
            while (true) {
                if (Character.toLowerCase(answer) == Character.toLowerCase('y')) {
                    System.out.println("Your boarding pass: " + classType1 + ", " + "seat " + setSeat(0, 9));
                    System.out.println();
                    break;
                } else if (Character.toLowerCase(answer) == Character.toLowerCase('n')) {
                    System.err.println("Next flight leaves in 3 hours. ");
```

```
                break;
            }
            System.out.print("Type y for yes, n for no: ");
            answer = scanner.next().charAt(0);
        }
    } else {
        System.out.println("Your boarding pass: " + classType1 + "," + "seat " + setSeat);
    }
    System.out.println();
    System.out.println("----------------------------------------------------------------------");
    System.out.println(Arrays.toString(seatAvailable));
    System.out.println("----------------------------------------------------------------------");
    System.out.println();
  }
}
```